Transforming Assessment

Webinar Series

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Student agency and confidence in assessment

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SHAPING THE FUTURE OF TERTIARY EDUCATION

Student Agency and Confidence in Assessment

Simon McCallum

32stylus. digital education

1897 VICTORIA UNIVERSITY OF WELLINGTON TE HERENGA WAKA NEW ZEALAND

NTNU Norwegian University of Science and Technology

Introduction

1999 - Started Lecturing University, Otago, NZ
2004 - First game course at an NZ Uni
2007 - Norway commercial game development
2009 - Lecturing in Norway
2018 - Lecturing at Victoria University of Wellington, NZ
2021 - Still Norway, NZ, and working with 32Stylus

Largest class: 990
Largest load: 10 courses in 1 year (1st - 3rd, Masters & PhD)

My Motivation

“Is this helping my students learn”

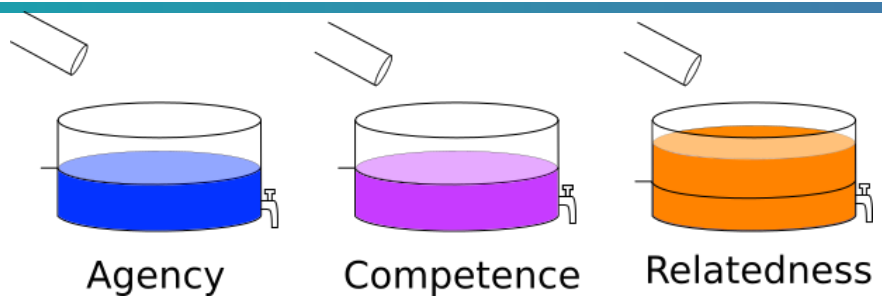
Creating learning environments

Fostering independent learners

Motivation

Extrinsic vs Intrinsic

- Grades - extrinsic
- Engaging content - intrinsic
- Learning is intrinsically motivating

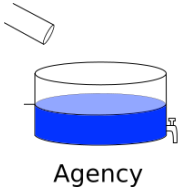


Motivation framework - Self Determination Theory

- Agency - number of choices = desired options
- Competence - a sense of progression and feedback
- Relatedness - that things are connected to meaning/life

Student Agency

Player Agency



What choices can be given to students?

What does the player do?

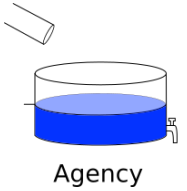
Project topics, lecture content, courses, degrees,...

Character class, weapon, quests, worlds,...

Rubric weighting: give students a range per section

Character class: give player base plus range (point buy)

Games



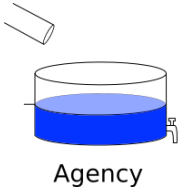
A series of complex choices.

Learning from the consequences of **decisions**

Randomness to provide a gradient around a outcome boundary.

Positive and negative consequences

Insights from Game Design



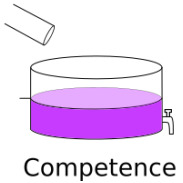
Give students **bounded agency**.

The illusion of choice increases acceptance of consequences

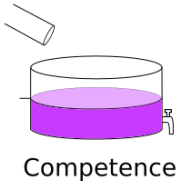
If players **believes** they lost from their action they keep playing

Failure attribution is essential for learning.

Student Competence	Player Competence
Grades	Score, Stars, Badges, Tasks, Completion, ...
Multiple deadlines	Short and long term goals
Didactic feedback with grades	Tutorials and walkthroughs
Competition against academic	Compete against game or other players



Insights from Game Design



Fast feedback essential

Multiple goals - short and long

Player controlled difficulty

Relative and absolute rankings - anonymous from others

Relatedness

Make projects related to the students

Give them the Course Learning Outcomes and have them develop the projects with you.

Meet future students/player and ask what they are interested in.

Technology

Technology as a tool, which has opened up opportunities

Board Games vs Computer Games

Math calculated for us - consistent and uniform

Games have created the default expectation on UX quality

Rubric

Area	Default	Range	Grading
Presentation	10%	[5-20]	/10
Background	20%	[10-30]	/10
Methodology	25%	[15-30]	/10
Results	25%	[15-35]	/10
Analysis	20%	[10-30]	/10

Bounded choice

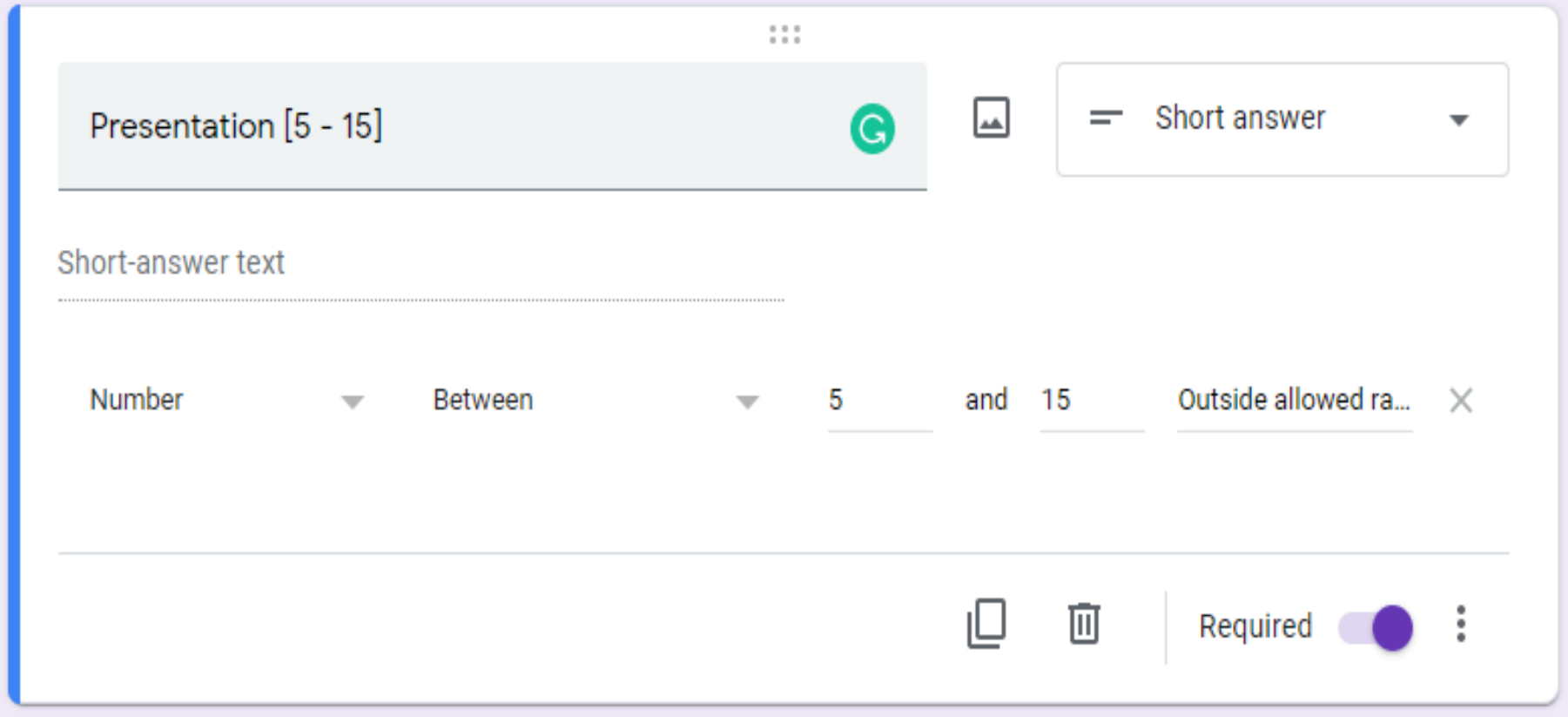
Create the narrative of agreed assessment.

Confidence in the what parts of your project are high quality.

Allows allocation of time to desired learning.

Objective: feeling of agency - **not** rank order/grade changes

Form collect choices



Usage

Increasing usage over semester

Students who used it liked the option.

Have asked for it in other courses

Pos	18	35	58
Neg	15	29	11
Min	-1.5	-4.5	-6
Q1	0	0	0
Median	0	0	0
Q3	0	0.5	1
Max	1	2	2.5
Avg -	-0.62	-0.93	-0.89
Avg +	0.67	0.84	1.31
Active change	70/120	99/120	23/27

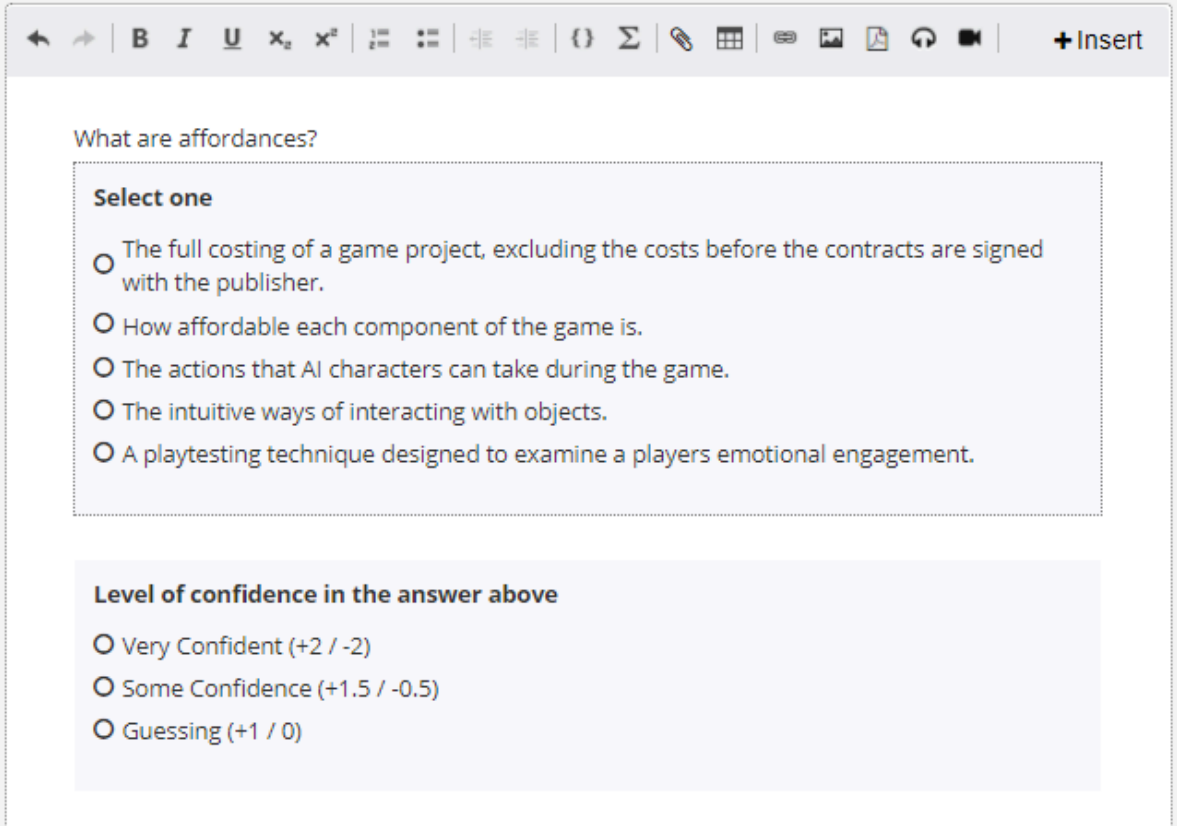
Item	Name	Minimum value	Maximum value	Type	Admin mark	Edit	Delete
M0	Late Penalty Days			Unspecified	✔		
M1	Design Evaluation	0	10	Numeric			
M2	Prototype	0	10	Numeric			
M3	Video	0	10	Numeric			
M4	Reflection	0	10	Numeric			
M5	weight Evaluation	30	50	Numeric			
M6	weight Prototype	20	40	Numeric			
M7	weight Video	5	15	Numeric			
M8	weight Reflection	10	30	Numeric			
M9	offset	0	35	Numeric	✔		

Each item that needs to have a mark must be setup by using the 'Add new marking item' link.

```
max(((M1/10)*(M5)+ (M2/10)*(M6)+(M3/10)*(M7)+(M4/10)*(M8)),((M1/10)*(40)+ (M2/10)*(30)+(M3/10)*(10)+(M4/10)*(20)))-M9
```

The current saved formula has a maximum calculated mark of **100**

Multichoice



Inspera

Multichoice grading choice

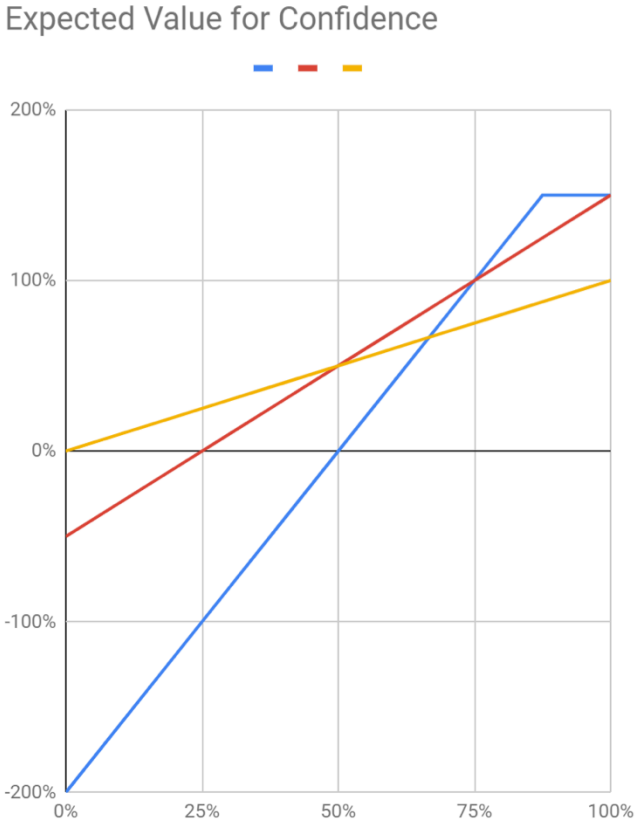
Allow changes in grading **per question.**

Student answers question and certainty

1) A, 3
2) B, 2

3 levels, Max 200% cap at 150%

1. 1.0 / 0.0
2. 1.5 / -0.5
3. 2.0 / -2.0



Models of marking

https://docs.moodle.org/310/en/Using_certainty-based_marking

Tony Gardner-Medwin - Championing certainty based marking

Lots of excellent work

True/False questions

Lots of good results on Certainty

Certainty vs **Confidence** - narrative choice.

Example

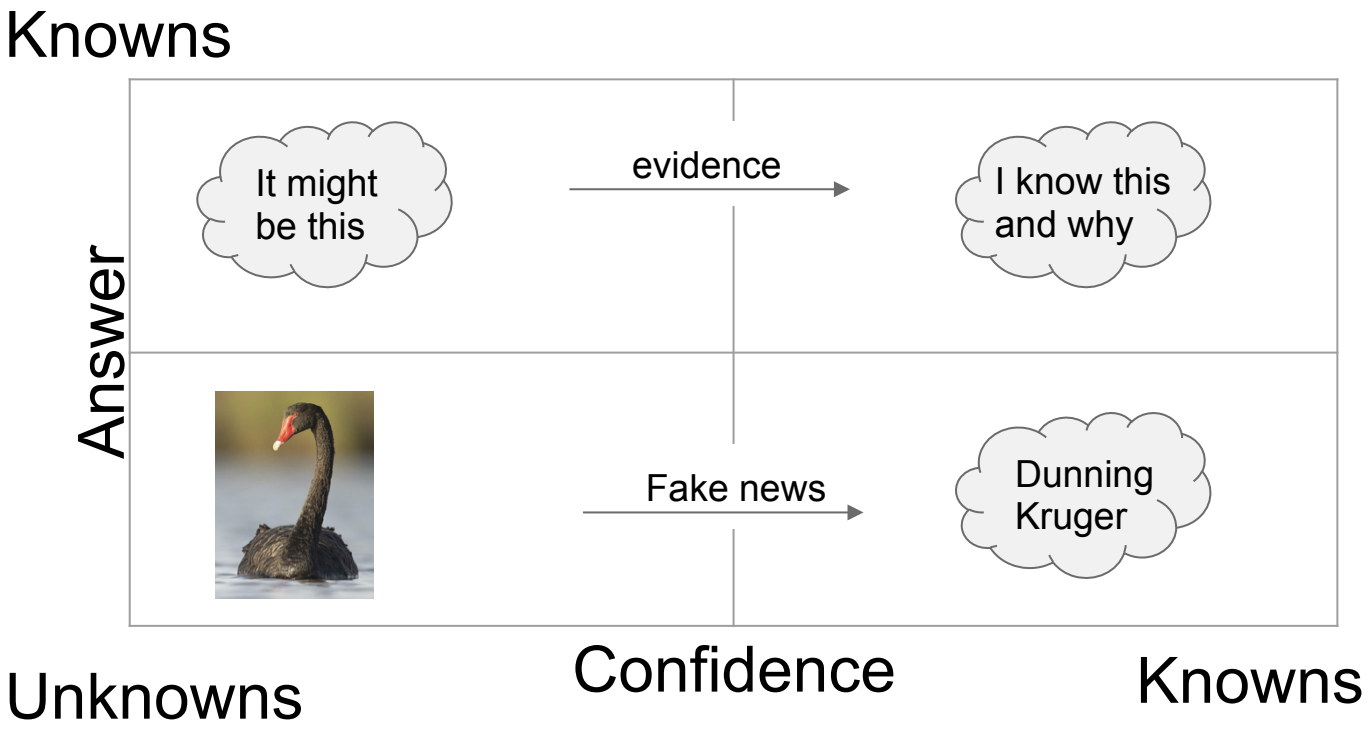
Important to cap

Note
correct vs grade

Give feedback

Candidate	Multichoice	Number Correct	1	1	1	2	2	2	3	3	3
50	9.0	7	D	2	1.5	C	3	2	C	3	2
51	3.5	5	E	1	0	D	2	-0.5	C	2	1.5
52	15.5	9	D	3	2	C	2	1.5	A	1	0
53	14.5	8	D	3	2	C	3	2	C	3	2
54	15.0	9	C	1	0	C	3	2	C	3	2
55	17.0	9	D	3	2	C	3	2	C	3	2
56	7.0	6	D	1	1	C	2	1.5	C	3	2
57	12.5	9	C	1	0	C	2	1.5	C	3	2
58	13.0	7	A	1	0	C	3	2	C	3	2
59	8.0	6	D	1	1	C	1	1	C	3	2
60	3.0	3	C	1	0	C	2	1.5	A	1	0

Rumsfeld's encapsulation (Tony's idea)



https://tmedwin.net/~ucgbarg/tea/APT_2019_tgm.pdf

Accurate confidence

Accurate confidence predicts future success **better** than grade.

Students feel that they are rewarded for knowledge

Provides data to talk about confidence with students

- Students lacking confidence but not skill can be identified
- Overconfidence can be addressed specifically

More Student Agency

Rubric **content** and weighting

- Iterate on the rubric with the students
- Agree on ranged weighting of rubric

Grading in exams

- Multichoice options
- Bonus/weak -
- Nomination of other student / expert

Rubric - measurable expectations

Present a draft

Question - “Is there something you want to be assessed on that I have missed”

Understanding that assessment is an extrinsic motivator –

What do you want to be motivated to achieve?

Agreed Goals

What is being assessed and why.

Students understand and agree on the motivation for assessment.

Understanding the pedagogical/andragogical approach.

The narrative of the rules

Bonus and Weak

Allow students to indicate their confidence E.G.
6 Qs - each worth 10 - allow a bonus scaled to 15 and weak scaled to 5.

Reward for meta knowledge/self assessment.

No harm for not engaging

Binary Search Oral Exam

Start with generalised questions - medium difficulty

- Correct -> ask harder questions
- Incorrect -> ask easier questions

Paired areas e.g. do you want to answer questions on A for B.

- student selects and answers questions
- Allows students some agency

Gamification

Education is the gamification of learning, its just a bad game.

Understanding game motivation, help understand humans

Using Agency, Competence, Relatedness,
(crafting/customisation and exploration)

Deep analysis rather than shallow application.

Research on Confidence

Soderquist - 1936 - https://www.jstor.org/stable/27526229?seq=1#metadata_info_tab_contents

Confidence Weighting and Test Reliability - Robert L. Ebel
http://helicon.vuw.ac.nz/login?url=https://www.jstor.org/stable/1433833

Confidence estimates on the correctness of constructed and multiple-choice responses
https://www.sciencedirect.com/science/article/pii/0361476X7990047X

https://www.tandfonline.com/doi/full/10.1080/01443410.2013.814194

A. Its theoretical origin is in the area of decision-making and its application extends to a wide range of tasks many of which are not commonly assessed in education (Crawford & Stankov, 1996; Stankov, 2000; Stankov & Crawford, 1996);
B. Evidence indicates that Confidence measures from different tests define a strong general factor (Kleitman & Stankov, 2007; Stankov, 2000; Stankov et al., 2012);
C. Confidence can provide useful information about metacognitive processing (Kleitman & Stankov, 2007; Stankov et al., 2012).

Transforming Assessment

Webinar Series

Webinar Session feedback

http://taw.fi/feedback

With thanks from your hosts

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Recording available
http://transformingassessment.com

Next session – 7 April 2021

Lessons learned from systemically implementing competency based assessment in first year engineering

Reg http://taw.fi/7apr2021

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